REMARKS

The application included claims 1-13 and 18-29 prior to entering this amendment.

The Applicant amends claims 1, 6, 8, 9, 12, 19, 21, and 22 and cancels claim 5 without prejudice.

Applicant adds new claim 30. No new matter is added.

The application remains with claims 1-4, 6-13, and 18-30 after entering this amendment.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 1-13 and 18-29 under 35 U.S.C. § 103(a) over Hajjahmad *et al.* (U.S. Patent 5,748,770) in view of Maurer *et al.* (U.S. Patent 6,650,773).

The rejection is traversed; however, Applicant amends claims 1, 6, 8, 9, 12, 19, 21, and 22 and cancels claim 5. Amended claim 1 recites a computer-implemented method, comprising:

> scanning an image with a scanner to obtain a full color level of a color element of a pixel of the scanned image;
>
> decreasing the full color level of the color element by reducing a number of bits of the full color level of the color element to form a reduced color level image, wherein the number of bits reduced from the full color level corresponds to an image noise level associated with scanning the image;
>
> composing a pattern comprising the number of bits reduced from the full color level of the color element, wherein the pattern has less color level of the color element than the full color level; and
>
> restoring the full color level of the color element of the pixel by combining the reduced color level image with the pattern.

Hajjahmad is directed to processing an electronic image by transforming color parameters between the spatial domain and the frequency domain (col. 1, lines 42-54; col. 2, lines 18-34). A color resolution of the image transformation is obtained by reconstructing an array of image pixels into a shifted array of pseudo pixels (col. 2, lines 49-59).

In rejecting claim 1, the Examiner alleged that Hajjahmad discloses composing a pattern comprising the color element having less color level than the full color level, and identified FIG. 4, steps 404-414 and column 10, lines 22-39 in support (page 3, lines 2-5 of the November 23, 2009 Office Action). The Examiner further alleged that the full color level recited by claim 1 is disclosed by Hajjahmad at FIG. 1, and also identified column 2, lines 2-6 in support of this interpretation.

Applicant initially remarks that the discussion in Hajjahmad of providing image processing of a scanned image, for example with respect to noise removal, is described as using known image processing functions (col. 4, lines 6-11). Hajjahmad itself is not at all concerned with any novel method of removing image noise, but of transforming color parameters between the spatial domain and the frequency domain as previously discussed (see also col. 4 lines 44-46). Furthermore, Hajjahmad describes that the red, green, and blue channels of the CCD scanner are limited to scanning certain frequencies of light, and hence an interpolation is made to each color channel to provide missing color components and then the color channel results are combined so that each pixel contains combined color data from each channel (col. 9, lines 23-45).

The color levels associated with the initial scanned image in Hajjahmad are operated on to provide the color resolution of the final image (col. 2, lines 49-59 and col. 10, lines 35-39). According to Hajjahmad, the full color resolution of the image is only obtained after the interpolation and combination of the multiple color channels has been complete (col. 10, lines 16-21). This "full color resolution" of Hajjahmad is not known beforehand, rather the results are obtained only after operating on the electronic image data of the scanned image to account for the limitations of the red, green and blue color channels (col. 9, lines 23-45). Accordingly, Hajjahmad fails to disclose *restoring the full color level of the color element of the pixel by combining the reduced color level image with the pattern*, since the original electronic image data is itself operated on by Hajjahmad's transformation process to obtain a new image comprising interpolated pixel values, which are estimated based on the mathematical operations of the PCT and IPCT coefficients (col. 10, lines 64-67). In other words, the "full color resolution" obtained by Hajjahmad's transformation operation does not restore the initial electronic image data of the scanned image, but are a modification of this image data. Furthermore, these estimated values of red, green, and blue are not even applied to the original pixel locations, but are assigned to pseudo-pixel locations (col. 15, lines 55-61). Accordingly, Hajjahmad's transformed color results are provided for a different pixel location than that of the originally scanned image.

Applicant further remarks that the Examiner has failed to indicate with specificity what elements or features of Hajjahmad allegedly disclose the color element, the pattern, and the reduced color image recited by claim 1. Figure 4 of Hajjahmad illustrates combining three

separate color components of red, green and blue in creating the output image. Whereas the Examiner had indicated that certain recovery rows and columns represent a pattern, it is unclear which rows and columns (for example related to which figure) the Examiner is referring to. Similarly, it is not clear from the Examiner's grounds for rejection what in Hajjahmad the Examiner believes to disclose a reduced color pattern or how it is combined with a pattern. The vague reference to FIG. 4 and column 10 fails to provide sufficient specificity to support the basis for rejection. Whereas column 10, lines 35-39 describe combining the parallel recovery for each color channel, Applicant respectfully submits that this fails to disclose *combining the reduced color level image with the pattern*; rather, the combination in Hajjahmad is of the transformation results of the three separate color components which are operated on in parallel (col. 10, lines 26-29).

In rejecting claim 1, the Examiner acknowledged that Hajjahmad fails to disclose reducing a number of bits of the full color level of the color element, and instead suggested that Maurer discloses these features.

Applicant remarks that the Maurer reference was used to previously reject claim 1, and that some of the same grounds for the rejection of claim 1 are again being made in the present Office Action. Applicant provided a detailed argument why Maurer failed to disclose the features being relied upon by the Examiner in the response filed on August 24, 2009. As the Examiner has repeated certain aspects of the basis for rejection, Applicant respectfully submits that at least some of the arguments provided in the August 24, 2009 response are not in fact moot, as proposed by the Examiner (page 2, first full paragraph of the November 23, 2009 Office Action), and should have been responded to in the present Office Action to expedite prosecution.

Maurer is directed to performing compression of an image (Abstract). Compression of an image is what is described in Hajjahmad as being performed according to any of a known image processing function, such as resizing (col. 4, lines 6-11). Accordingly, Applicant respectfully submits that the combination of Maurer with Hajjahmad at most proposes combining the separate processes of compressing an image of Maurer and operating on color resolution of an image using the spatial and frequency domain transformation of Hajjahmad. There is no suggestion or teaching in either Maurer or Hajjahmad of combining the methodologies into the same method or process. Applicant respectfully submits that any such proposed combination which does combine the separate methodologies in the manner proposed by the Examiner is not

enabled, and further is only made obvious using impermissible hindsight of Applicant's specification.

Even assuming, for argument's sake, that the combination of Maurer with Hajjahmad is appropriate, Applicant respectfully submits that a bit-depth truncation of the color level, as taught by Maurer, would be contrary to the stated purpose of Hajjahmad's transformation process. As discussed in detail above, Hajjahmad is attempting to reconstruct a color array of the scanned image by interpolating colors between pixels. Bit-depth truncation of the color level during this transformation, as proposed by the Examiner in view of Maurer, would effectively decrease the color level, contrary to the stated purpose of Hajjahmad to realize a full color resolution of the image (col. 2, lines 49-51). Since Hajjahmad teaches that the full color level is achieved by interpolating the color levels between pixels, the combination would teach interpolating the reduced color levels that resulted from Maurer's bit-depth truncation. The resulting transformation would result in an image with an overall reduced color level than that of the original scanned image.

Neither Maurer nor Hajjahmad disclose how this lost color level could be restored to the array of pseudo-pixels in the transformed image. Whereas Maurer describes reconstructing the luminance channel according to the same lossless standard (col. 3, lines 43-46), the transformation of Hajjahmad has replaced the previous color information with a pseudo-pixel array such that the same lossless standard of Maurer would no longer apply.

The Examiner identified Maurer's reference to discarding visual contouring artifacts as disclosing a method for reducing image noise (page 3 of the Office Action). Applicant respectfully submits that visual contouring artifacts do not suggest image noise, as recited by claim 1. Rather, the image noise is described as being reduced in the pre-processing step of Maurer. At column 2, lines 15-19, Maurer describes a pre-processing of the digital image to remove random noise, Guassian noise, and "salt and pepper" noise. Applicant respectfully points out that the optional pre-processing step occurs prior to any of the compression steps that form the majority of Maurer's specification (Fig. 1 and col. 2 lines 14-22). Furthermore, the compression steps may be completed independently of the pre-processing step (col. 2 lines 19-30), since they are directed to the different purposes of image compression versus removing noise.

Accordingly, Applicant respectfully submits that any suggestion that the compression

method of Maurer is directed to a method for reducing image noise is improper. Furthermore, the Examiner's assertion that he interprets noise to include contouring artifacts (page 4, final paragraph) is not controlling when Maurer himself has separately defined and treated these terms differently in the specification. Neither Hajjahmad nor Maurer are directed to reducing image noise, and accordingly, the combination fails to disclose *wherein the number of bits reduced from the full color level corresponds to an image noise level associated with scanning the image*, as recited by claim 1.

Claims 6, 8, and 18 are believed to be allowable for at least some of the reasons provided above with respect to claim 1. As claims 2-4, 7, 9-13, and 19-29 depend from claim 1, 6, 8, or 18, they are believed to be patentable over the art for at least the foregoing reasons, as well as for the further novel features recited respectively therein. Accordingly, withdrawal of the rejection of claims 1-4, 6-13, and 18-29 is respectfully requested.

New Claim

Applicant adds new claim 30 for consideration. No new matter is added.

Any statements made by the Examiner that are not addressed by the Applicant do not necessarily constitute agreement by the Applicant. In some cases, the Applicant may have amended or argued the allowability of independent claims thereby obviating grounds for rejection of the dependent claims.

CONCLUSION

For the foregoing reasons, the Applicant respectfully requests reconsideration and allowance of the present application. The Examiner is encouraged to telephone the undersigned at (503) 546-1812 if it appears that an interview would be helpful in advancing the case.

Customer No. 73552

Respectfully submitted,

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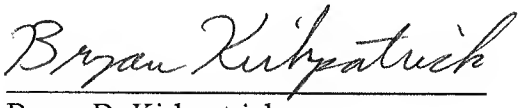

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